ABSTRACT

[0075] Systems and methods are disclosed for obtaining compact, high beam-quality imaging systems for use within a spherical housing of a sensor ball of a given size. Primary and secondary mirrors may be positioned or adapted for positioning within a spherical housing of a sensor turret or sensor ball having a window. Two or more fold mirrors may direct an optical path from the primary and secondary mirrors to one or more detectors or cameras. One or more beamsplitters may be included to produce two or more optical channels for simultaneous imaging. The beamsplitter may be a beamsplitter cube having field correction structures. Embodiments may have high beam quality and may be diffraction-limited with relatively wide fields of view (FOV). A cold shield may be included that reduces MWIR or LWIR reflections at a MWIR or LWIR focal plane array. A laser illumination or designation system may be included.